UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,524	03/15/2001	David E. Lowery	28341/6114.N	4519

4743 7590 10/17/2002

MARSHALL, GERSTEIN & BORUN
6300 SEARS TOWER
233 SOUTH WACKER
CHICAGO, IL 60606-6357

EXAMINER
NAVARRO, ALBERT MARK

ART UNIT	PAPER NUMBER
1645	13

DATE MAILED: 10/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/809,524	Lowery et al
Examiner	**Art Unit**
Mark Navarro	1645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above, claim(s) *15-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 8, and 10-14* is/are rejected.

7)☒ Claim(s) *6, 7, and 9* is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some* c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 6
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restriction

1. Applicant's election with traverse of Group I, the *ssa*T gene and SEQ ID NO: 1, claims 1-14 in Paper No. 12, received July 25, 2002 is acknowledged. The traversal is on the ground(s) that it would not be a serious burden to search both groups I and II together. Applicant's further assert that a search relating to the methods of group II would significantly overlap with the search required for the compositions of Group I. Applicant's further assert that the requirement to elect a particular ssa gene is inconsistent with current PTO practice based on the Commissioner's sua sponte decision to partially waive the requirements of 37 CRF 1.141. Applicant's finally assert that SEQ ID NO: 1 and 2 are not unrelated in that they encode the same protein ssaT from Salmonella dublin and Salmonella typhimurium, respectively. This is not found persuasive because the separate classification of the groups is one indication of the burdensome nature of the search involved. The literature search, particularly relevant in this art, is not co-extensive and is much more important in evaluating the burden of search. Clearly different searches and issues are involved in the examination of each group. Applicant's arguments are not found to be persuasive in view that a search of the prior art may reveal a reference which anticipates the composition, but does not necessarily anticipate or render obvious the method. Concerning Applicant's arguments that restriction to a single sequence is in violation of current PTO practice, Applicant's are

respectfully directed to MPEP 803.04 which sets forth that polynucleotides encoding different proteins are separate inventions. The fact that SEQ ID NO: 1 and 2 each encode a protein with a different primary, secondary, and tertiary structure makes them different inventions. If SEQ ID NO: 1 and 2 were to encode the identical protein structure (no substitutions, insertions or deletions) they would be considered together. However, in view that the encoded protein has differences the restriction requirement to a single sequence is deemed appropriate.

For these reasons the restriction requirement is deemed to be proper and is adhered to.

Claim Rejections - 35 USC § 112

2. Claims 1-4, 8, and 11-14 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a vaccine composition comprising an immunologically protective amount of an attenuated non-reverting mutant Salmonella bacterium in which ssaT, ssaJ or ssaC are partially deleted, does not reasonably provide enablement for a vaccine composition comprising an immunologically protective amount of an attenuated non-reverting mutant Salmonella bacterium in which two or more genes within the SPI2 region have been inactivated. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The claims are drawn to vaccine compositions comprising an immunologically protective amount of a first attenuated, non-reverting mutant Salmonella bacterium in which two or more genes within the SPI2 region have been inactivated.

Linde et al (Vaccine Vol. 8, pp 278-282, 1990) set forth that the use of double or multiple gene disruptions is unpredictable in its effect on virulence and immunogenicity, the introduction of multiple mutations may over attenuate a bacteria for a particular host. (See abstract).

Hensel et al (Molecular Microbiology Vol. 24, pp 155-167, 1997) set forth that Salmonella strains carrying SPI2 mutations in ssaC and ssrA have wild-type levels of replication in macrophages. (See page 164).

Consequently, one of skill in the art would be forced into undue experimentation to determine which of the numerous genes, and more specifically which precise combination of inactivated genes within the SPI2 region would be required to be inactivated to produce a strain which is attenuated and non-reverting while retaining its ability to elicit an immune response. Given that Linde et al set forth that multiple gene disruptions are unpredictable, and that mutations with SPI2 regions do not necessarily result in attenuation, the skilled artisan would be required to preform excessive experimentation in a highly unpredictable field with limited guidance, to isolated the appropriate strain.

3. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

Claim 5 recites a polynucleotide segment which has 95% sequence identity to SEQ ID NO: 1.

The specification and claims do not indicate what distinguishing attributes are shared by the members of the genus. Thus, the scope of the claims includes numerous structural variants, and the genus is highly variant because a significant number of structural differences between genus members is permitted. Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, SEQ ID NO: 1 alone is insufficient to describe the genus. Thus, Applicant's have not described a function which is shared by SEQ ID NO: 1 which would adequately describe the genus. One of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe the genus. Thus, applicant was not in possession of the claimed genus.

Adequate written description requires more than a mere statement that it is part of the invention and a reference to a potential method of isolating it. The protein itself is required. See

Fiers v. Revel, 25 USPQ 2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. V. Chugai Pharmaceutical Co. Lts.*, 18 USPQ2d 1016.

Applicants are directed to the Revised Interim Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, 1 "Written Description" Requirement, Federal Register, Vol. 64, No. 244, pages 71427-71440, Tuesday December 21, 1999.

4. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim is vague and indefinite in the recitation of "stringent conditions." Possibilities for hybridization are determined by the stringency of the procedure. Stringency, determined by the physical and chemical conditions, establishes the degree of hybridization. Without providing the chemical and physical conditions under which the hybridization is to be preformed as well as that of the wash step, one of skill in the art would be unable to determine the metes and bounds of the claimed invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-4, 8, 10, and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Holden.

The claims are drawn to vaccine compositions comprising an immunologically protective amount of a first attenuated, non-reverting mutant Salmonella bacterium in which two or more genes within the SPI2 region have been inactivated.

Holden (U.S. Patent Number 5,876,931) disclose of multiple transposon insertions into the type III secretion system (SPI2 region) of Salmonella typhimurium. (See columns 29-30).

Since the Patent office does not have the facilities for examining and comparing applicants' product with the product of the prior art reference, the burden is on applicants to show an unobvious distinction between the material structural and functional characteristics of the claimed product and the product of the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

It is noted that the claims recite a vaccine, however the recitation of a vaccine is deemed to be merely an intended use of the claimed composition, and therefore carries no patentable weight.

Claims 6-7 and 9 are objected to as depending upon a rejected base claim, however claims 6-7 and 9 are free of the prior art of record.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Navarro, whose telephone number is (703) 306-3225. The examiner can be reached on Monday - Thursday from 8:00 AM - 6:00 PM. The examiner can be reached on alternate Fridays. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Lynette Smith can be reached at (703) 308-3909.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Group 1645 by facsimile transmission. Papers should by faxed to Group 1645 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the official Gazette 1096 OG 30 (November 15, 1989). The CMI Fax Center number is (703) 308-4242.

Mark Navarro

Primary Examiner

October 16, 2002